Overview of Logistics

Professor Keebom Kang

Graduate School of Business and Public Policy

Naval Postgraduate School

Monterey, California

kkang@nps.navy.mil

(831) 656-3106

1

Outline

Overview of Logistics

    importance of logistics

    importance of information technology (IT)

    impact of logistics and IT on global economy

    case studies

What is logistics?

- Victory of the Gulf War (*Newsweek)*
  - Air supremacy
 - Patriot missile
  - Troops
  - C4I
  - Logistics

What is logistics?

- Logistics is the collection of activities associated with acquiring, moving, storing and delivering supply chain commodities (product in all stage of manufacturing, services and information). Logistics encompasses the business functions of transportation, distribution, warehousing, material handling, and inventory management. Estimated total logistics costs incurred by the U. S. business in 1993 was 670 billion dollars, or roughly 11% of the U. S. Gross Domestic Product (GDP), or more than double the defense budget.
  - Automobile
  - restaurant

Logistics, IT and Global Economic Cycle

- Once upon a time

- Industrial Revolution

- World War II – 1950's: auto industry (GM)

- 1960's: mainframe computer (IBM), Telecom (AT&T)

- 1970's: mainframe to mini (DEC) oil embargoes

- 1980's: mini to PC (Microsoft/Intel), spreadsheets

- 1990's: PC to network (Cisco) internet, email

- 2000 and beyond: wireless, integrated network, who knows?

Global Economy

USA

Japan

| 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
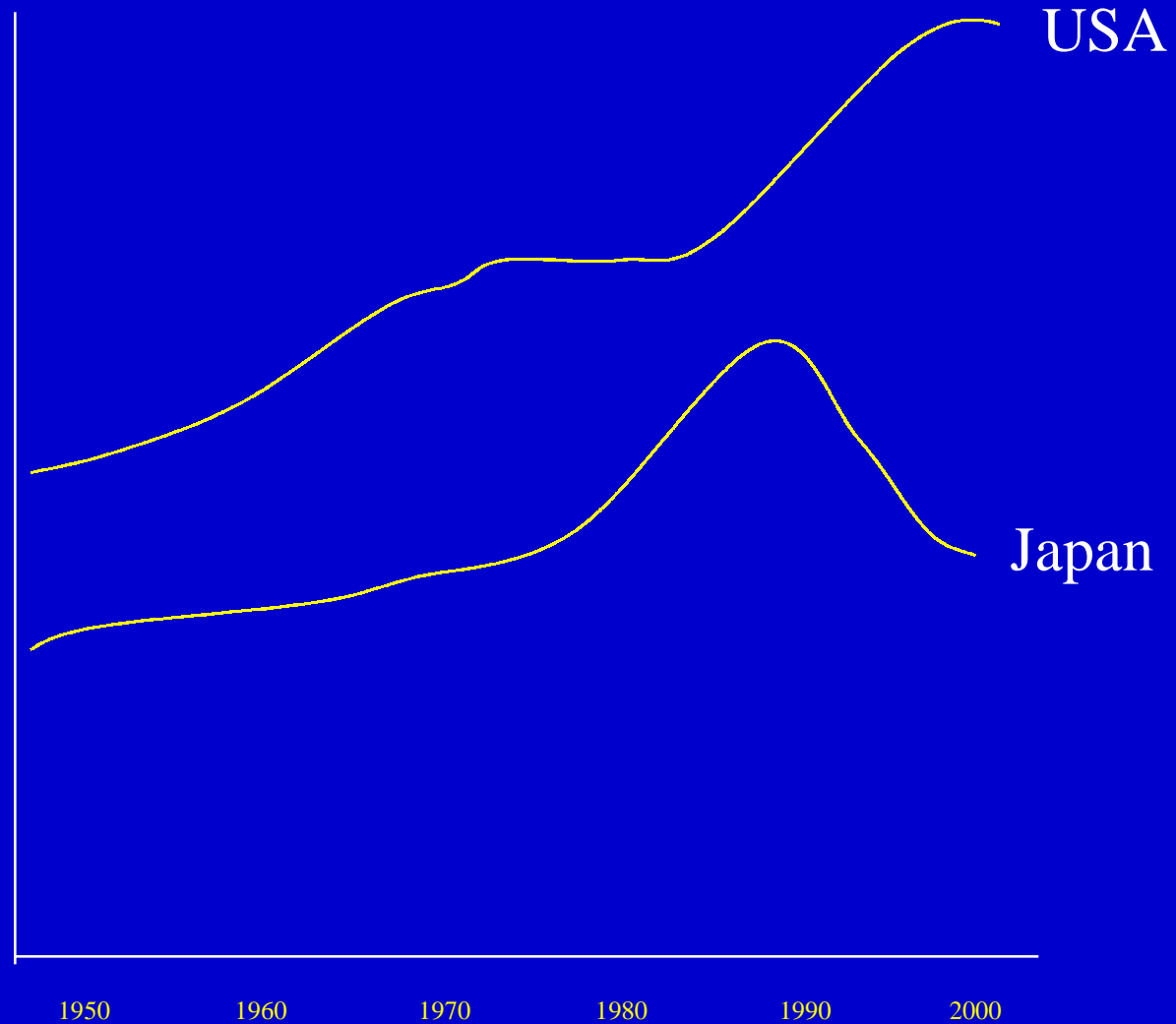
Significance of Logistics

1. Technology

   Barcode, RF tags, GPS, Internet

   Higher labor cost, but improved productivity

2. Global Market

   wage, tax, manufacturing environment

3. Deregulated transportation/telecommunication

4. Customer Service (more computing power)

   supply chain management

5. Environment

   facility location, recycling centers,

   HAZMAT management

Cases in Logistics Applications

- McDonald's (inventory control & fast TAT)
  - First day revenue: $366.12 in 1955 (Des Plaines, IL)
  - Freezing techniques: easier inventory control
  - Prime vendor & cross-docking concept
    - (25 deliveries per week to one or two deliveries)
    - 175 beef suppliers to 5 in mid 1980
  - Drive-in, double windows, cordless microphone, TV monitors in the drive windows and in the kitchen
  - Data collection from the POS
  - Queueing analysis (e.g. Disney), facility layout

Cases in Logistics Applications
(continued)

- Dell (order to manufacture)
- Wal-Mart and Costco (cross-docking)
- Airline industry
  - Hub/spoke
  - yield management, overbooking, mileage programs
- Nike, Amazon.com
- Third-party Logistics (I2, SAP, Fedex)
- Rolax, Parker, Monc Blanc
- De Beers (info control, supply/demand control)

Cases in Logistics Applications
(continued)

- Importance of financial industry in technology
  - credit card, stock trading, investment banking
- Service industry
  - Gas stations (fast TAT, cash magt, no repair)
  - Hospital, health care (med info sys)
  - Entertainment, Sports
  - Hotel chains, rental car chains (e.g., fleet mix)
  - …………

Bottom Line

- The world leading companies are the leaders in logistics.

- Logistics cannot function without information technology (IT)

- Cycle time reduction, and in turn reduces inventory (I.e., Time is Money)

CURRENT LOGISTICS PROCESSES

- Too much paper
    - from design to manufacturing to maintenance
    - Supportability problems surface too late to influence design criteria
    - Redundant and inconsistent data

- Inefficient & unnecessary workflows

- Long TAT (turn-around-time)

TOO MUCH PAPER

- The M1A1 Tank requires more than 40,000 pages of Technical Manuals to support its deployment.

- The Aegis cruiser carries 23.5 tons of Technical Manuals above the main deck. If they are taken away, the ship would rise three inches in the water.

- US Air Force has 150,000 Technical Orders (TOs) with an average of 100-150 pages each. However, a single system, such as B-1 Bomber, can generate 35,000 new TOs. Each year, 2-3 million pages are revised
  - 500 days to implement a routine change
  - cost of $1,000 per page
  - major mishaps due to inaccurate TOs

Future of LIS

- Paperless Digital System
  - E-tickets, Boeing 777, Chrysler CAD.
  - DOD travel processing : $2.3 B (actual travel spending $2 B)
  - Healthcare: $1 T business (20-30% of the revenue on paper work)
  - IRS

Future of LIS (continued)

- Micro-Circuit Technology in Logistics Applications/Radio Frequency (MITLA/RF).
  - Credit card, ID card, Ski lift/subway tickets, highway toll, golf cart
  - Inventory control, asset tracking (airline luggage, police, military, post office, delivery)
- RF, GPS, Internet (provides total asset visibility)
- Wireless Internet, Voice-recognition
  - phone directory service
  - Airline arrival arrival/departure info
- Customized web (better log plan)
- Real-time decision support
- Wal Mart + Amazon (brick & mortar + e-commerce)
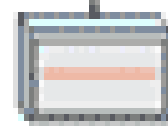- E-commerce retail in auto industry
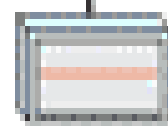
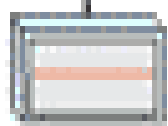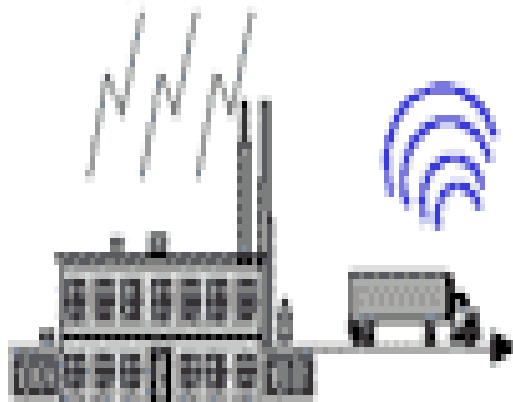Trading Partner Enterprise Software Portal

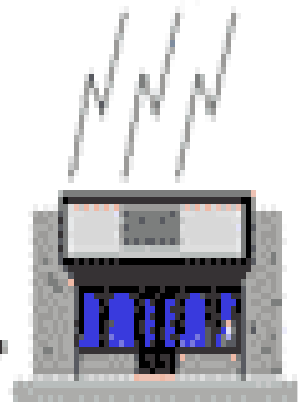Savi Data Server
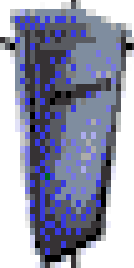
Savi Data Appliance

Supplier Factory Distribution Center Customer

Concluding Remarks

- Value of information
  - Transformation of wealth (tangible to intangible)
  - Computer security
- Most precious capital ?
  - Silicon Valley: UC Berkeley, Stanford U
- Importance of re/education to keep up with technology

Concluding Remarks

- Globalization: more travels, trades
- Creating more jobs
  - higher standard of living
  - more women in the workforce
    - changes in law, e.g., military, sexual harassment
    - Childcare
- Importance of sound financial system, and the role of government